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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/758,330
Filing Date: January 15, 2004
Appellant(s): KORKOWSKI ET AL.

Austen Zuege
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed December 9, 2008 appealing from the Office action mailed July 17, 2008.

I. Real Party in Interest

A statement identifying the real party in interest is contained in the brief.

II. Related Appeals and Interferences

There are no related appeals.

III. Status of Claims

The statement of the status of the claims contained in the brief is correct.

Claims 1 and 3-21 are pending and rejected. Claim 2 was previously cancelled. No claims are withdrawn, objected to, or allowed.

No amendments to the claims were made after the Final Office Action dated July 17, 2008.

The claims in their current form (including those claims under appeal) are presented in The Appendix - Section 8 - Claims on Appeal.

IV. Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

V. Summary of Claimed Subject Matter

The summary of invention contained in the brief is correct.

VI. Grounds of Rejection to be Reviewed Upon Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal contained in the brief is correct.

VII. Claims

The copy of the appealed claims contained in the Appendix to the brief is correct.

VIII. Evidence Relied Upon

The following is a listing of the evidence (e.g., patents, publications, Official Notice, and admitted prior art) relied upon in the rejection of claims under appeal:

Bauck et al (US 4,189,759)

Lin et al (US 6,961,218)

Nagahiro et al (US 2003/0218833)

IX. Grounds of Rejection

1. Claims 1, 3-8, 11-13 and 15-21 are obvious over Bauck et al. (U.S. Pat. No. 4,189,759) in view of Lin et al. (U.S. Pat. No. 6,961,218) under 35 U.S.C. § 103(a).

2. Claims 9, 10 and 14 are obvious over Bauck et al. (U.S. Pat. No.4,189,759) in view of Lin et al. (U.S. Pat. No. 6,961,218) in further view of Nagahiro et al. (U.S. Pat. App. Pub. No. 2003/0218833) under 35 U.S.C. §103(a).

Regarding claims 1, 3-8, 11-13 and 15-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bauck et al (US Patent Number 4189759), in view of Lin et al (US Patent Number 6961218).

Regarding claim 1, Bauck discloses:

An endcap for use on an actuator arm carrying a single head gimbal assembly that includes a load beam (figure 2, item 26), wherein the endcap provides balance (column 8, lines 32-38), the endcap comprising:

A body (figure 2, item 24) of the endcap connected to the actuator arm (figure 2, items 52 & 54 are connected via items 112 & 114); and

A shielding feature extending from the body in a cantilevered configuration (figure 2, items 122 & 124) for reducing windage excitation of the head gimbal assembly (columns 10 & 12, lines 18-24 & 28-39).

Bauck fails to specifically disclose:

Wherein the endcap is connected to the end of the actuator arm;

A body of the endcap connected to the actuator arm at a side of the actuator facing away from the load beam.

Lin discloses:

An endcap (figure 6, item 165; column 5, lines 11-12) for use on an actuator arm carrying a single head gimbal assembly (figure 6, item 110) that includes a load beam (figure 6, item 166), wherein the endcap is connected to a an end of the actuator arm to provide balancing (column 5, lines 8-26 & 42-54), the endcap comprising:

A body of the endcap (figure 6, item 165) connected to the actuator arm at a side of the actuator facing away from the load beam (figure 6).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide Buck with an endcap connected to the end of the actuator arm on the opposite side of the arm from the load beam, as taught by Lin, because this is a matter of placement of parts which will still function similarly.

Regarding claim 3, Bauck and Lin disclose the features of base claim 1, as stated in the 103 rejection above, and Bauck further disclosing:

Wherein the shielding feature includes a balancing portion (figure 2, item 131) and a shielding portion (figure 2, item 120).

Regarding claim 4, Bauck and Lin disclose the features of base claim 3, as stated in the 103 rejection above, and Bauck further disclosing:

Wherein the shielding feature is not connected to the actuator arm (figure 2, item 120 is not in contact with the actuator arm).

Regarding claim 5, Bauck and Lin disclose the features of base claim 3, as stated in the 103 rejection above, and Bauck further disclosing:

Wherein the balancing portion is shaped so the endcap is symmetric with respect to the shielding portion and the balancing portion (figure 2, items 120 & 131 are symmetrically split by action line [130]).

Regarding claim 6, Bauck and Lin disclose the features of base claim 1, as stated in the 103 rejection above, and Bauck further disclosing:

Wherein the shielding feature is structured to divert airflow proximate to a portion of the head gimbal assembly that experiences windage excitation (figure 7, column 12, lines 27-39).

Regarding claim 7, Bauck and Lin disclose the features of base claim 6, as stated in the 103 rejection above, and Bauck further disclosing:

Wherein the shield is structured to divert airflow away from a windward side of the head gimbal assembly (column 10, lines 18-24).

Regarding claim 8, Bauck and Lin disclose the features of base claim 1, as stated in the 103 rejection above, and Bauck further disclosing:

Wherein the head gimbal assembly further comprises a load beam (figure 2, item 26), a gimbal

(figure 2, item 76), a transducing head (figure 2, item 58), and a flexible interconnect circuit (column 3, lines 48-59), and wherein the shielding feature is structured to divert an airflow proximate to a critical portion of the flexible interconnect circuit (figure 7).

Regarding claim 11, Bauck and Lin disclose the features of claim 11 that are in common with those previously disclosed in claim 1, as stated in the 103 rejection above, and Bauck further disclosing:

A head actuation system comprising:

An actuator arm (figure 2, items 52 & 54);

A head gimbal assembly (figure 2, item 62 & 76) for carrying a transducing head (figure 2, item 58), the head gimbal assembly having a load beam (figure 2, item 26) connected to a first side of the actuator arm (figure 3, via items 102, 104, 106 & 108); and

A shield (figure 2, item 24) having a first portion attached to the actuator arm (figure 2, items 112 & 114) and a second cantilevered portion (figure 2, items 120 on right and left) for reducing airflow excitation of the head gimbal assembly (columns 10, 11 & 12, lines 18-24, 10-18 & 31-34).

Regarding claim 12, Bauck and Lin disclose the features of base claim 11, as stated in the 103 rejection above, and Bauck further disclosing:

Wherein the shield is attached to a first end of the load beam (figure 2), and wherein the head gimbal assembly comprises:

A flexible interconnect circuit adjacent to the load beam (column 3, lines 48-59) and electrically connected to the transducing head (column 3, lines 48-59);

A gimbal attached to a second end of the load beam (figure 2, item 76); and

A slider supported by the gimbal (figure 2, item 76 supports 58), the slider disposed to support the transducing head (figure 2, item 58 supports item 84).

Regarding claim 13, Bauck and Lin disclose the features of base claim 11, as stated in the 103 rejection above, and Bauck further disclosing:

Wherein the shield is an endcap (figure 2, item 24 attaches to item 22 to form an endcap) wherein the first portion of the shield is a body of the endcap (figure 2, items 112 & 114 are the connecting bodies of the endcap) and the second portion of the shield is a symmetrical protrusion from the body of the endcap (figure 3, items 122 & 124 are symmetrical).

Regarding claim 15, Bauck and Lin disclose the features of base claim 11, as stated in the 103 rejection above, and Bauck further disclosing:

Wherein the shield is an endcap connected to an end of the actuator arm to provide balancing (column 8, lines 32-38), the endcap having a body (figure 2, items 112 & 114) and a plurality of protrusions from the body (figure 2, items 122 & 124).

Regarding claim 16, Bauck and Lin disclose the features of base claim 15, as stated in the 103 rejection above, and Bauck further disclosing:

Wherein the endcap is symmetrical with respect to an axis extending along a center length of the load beam (figure 2, items 122 & 124 are symmetrical with item 130).

Regarding claim 17, Bauck and Lin disclose the features of base claim 16, as stated in the 103 rejection above, and Bauck further disclosing:

Wherein the protrusions form substantially a "C" shape (figure 3, the protrusions [24] meet at the end of item 26 to form a "C").

Regarding claim 18, Bauck and Lin disclose the features of base claim 17, as stated in the 103 rejection above, and Bauck further disclosing:

Wherein at least one of the plurality of protrusions has a first portion (figure 2, items 120) and a distal portion (figure 2, item 110), the first portion defines a plane, and

the distal portion defines another plane (figure 2, items 120 & 110 are within two separate planes).

Regarding claim 19, Bauck and Lin disclose the features of claim 19 that are in common with those previously disclosed in claims 11, 12 and 13, as stated in the 103 rejections above, and Bauck further disclosing:

A rotatable magnetic disc (figure 7, items 140), wherein the first side of the actuator arm is arranged to face the rotatable magnetic disc (figure 7, both first and second sides are capable of facing the magnetic disk).

Bauck fails to specifically disclose:

A rotatable actuator arm.

Lin discloses:

A rotatable actuator arm (column 4, lines 13-14);

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to make the arm of Bauck rotatable, as taught by Lin, because this is very well known in actuator arms.

Regarding claim 20, Bauck and Lin disclose the features of base claim 19, as stated in the 103 rejection above, Bauck further disclosing:

Wherein the symmetrically balanced shape feature is disposed proximate to an excitable portion

of the head gimbal assembly (figure 2, items 24 meet in an area near the HGA at item 110) to control excitation of the head gimbal assembly caused by
airflow generated by rotating the magnetic disc (columns 10, 11 & 12, lines 18-24, 10- 18 & 31-34).

Regarding claim 21, Bauck and Lin disclose the features of base claim 1, as stated in the 103 rejection above, and Bauck further disclosing:
Wherein a portion of the head gimbal assembly defines a first plane (figure 4, plane through the bottom edge of item 58) and the shielding feature of the endcap defines a second plane that is arranged substantially parallel to and spaced from the first plane (figure 4, plane through item 126 is parallel and spaced from the first plane).

Regarding claims 9, 10 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bauck et al and Lin et al, as applied to claims 1 and 11 above, in view of Nagahiro et al (US PG-Pub 2003/0218833).

Regarding claims 9 and 10, Bauck and Lin disclose the features of base claim 1, as stated in the 103 rejection above, but fails to specifically disclose:
Wherein the endcap is disposed in relation to an X, Y and Z coordinate system, wherein an airflow in a substantially Z/Y direction causes excitation of the head gimbal assembly, the shielding feature having a shape disposed in an X-Y/X-Z plane for controlling the airflow, wherein the substantially X-Y/Y-Z plane is defined substantially parallel to the actuator arm/an axis of rotation of the actuator arm.

Nagahiro discloses:

An endcap for use on an actuator arm carrying a single head gimbal assembly, the endcap comprising:

A body (figure 2, item 13); and

A shielding feature (figure 2, item 12) extending from the body for reducing windage excitation of the head gimbal assembly (page 1, paragraph 15).

Wherein the endcap is disposed in relation to an X, Y and Z coordinate system, wherein an airflow in a substantially Z/Y (out-plane direction/in-plane direction) direction causes excitation of the head gimbal assembly (paragraph 49 & 69), the shielding feature having a shape disposed in an X-Y/X-Z plane (shielding feature device has a 3 dimensional shape) for controlling the airflow (figure 2, item 12), wherein the substantially X-Y/Y-Z plane is defined substantially parallel to the actuator arm/an axis of rotation of the actuator arm (paragraph 49).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the shielding system of Bauck with a damping system, as taught by Nagahiro, because this will provide for multi-dimensional damping which will provide a more stable slider, as noted in paragraphs 48 & 49.

Regarding claim 14, Bauck and Lin disclose the features of base claim 13, as stated in the 103 rejection above, but fails to specifically disclose:

Wherein the protrusion is T-shaped.

Nagahiro discloses:

Wherein the protrusion is T-shaped (figure 2, item 12 is T-shaped).

X. Argument

Issue No. 1: Whether claims 1, 3-8, 11-13 and 15-21 are obvious over Bauck et al. (U.S. Pat. No. 4,189,759) in view of Lin et al. (U.S. Pat. No. 6,961,218) under 35 U.S.C. § 103(a).

Issue No. 2: Whether claims 9, 10 and 14 are obvious over Bauck et al. (U.S. Pat. No.4,189,759) in view of Lin et al. (U.S. Pat. No. 6,961,218) in further view of Nagahiro et al. (U.S. Pat. App. Pub. No. 2003/0218833) under 35 U.S.C. §103(a).

XI. Response to Arguments

1. Whether claims 1, 3-8, 11-13 and 15-21 are obvious over Bauck et al. (U.S. Pat. No. 4,189,759) in view of Lin et al. (U.S. Pat. No. 6,961,218) under 35 U.S.C. § 103(a).

Group #1: Claims 1, 3-8, 11-13 and 15-21

Appellant's argument on Pages 12-18:

" Bauck et al. in view of Lin et al. fail to disclose, teach or suggest each and every limitation of independent claims 1, 11 and 19, because those references cannot be combined in the manner suggested in the Final Office Action and Advisory Action to produce the present invention as claimed. The guard portion 24 of Bauck et al. is useful for its intended purpose of surrounding the transducer 58 when inserted into the flexible disc file 134 (or pack) only because the guard portion 24 is positioned in-plane with the tip portion 26 (or load beam). In suggesting a modification of the teachings of Bauck et al. based on Lin et al., the Final Office Action cites Lin et al. as disclosing an "endcap (figure 6, item 165; column 5, lines 11-12) for use on an actuator arm.., wherein the endcap is connected to a [sic] an end of the actuator arm to provide balancing (column 5, lines 8-26 & 42-54) ...." (7/17/08 Office Action, pp. 3-4). The Final Office Action further identifies element 165 of Lin et al. as being a body of the endcap connected to the actuator arm at a side facing away from the load beam. (7/17/08 Final Office Action, p. 4). ...Furthermore, Lin et al. does not contain the missing limitations of Bauck et al. Element 165 shown in FIG. 6 of Lin et al. and cited in the Final Office Action is not a component used *on* an actuator arm as stated in the Final Office Action, but rather is a *portion of a bifurcated actuator arm.*[2] Moreover, independent

claims 1, 11 and 19 each recite that the endcap or shield have a cantilevered configuration or include a cantilevered portion. Yet Lin et al. does not disclose the first actuator arm tine 165 as being cantilevered, but rather explicitly teaches away from a cantilevered configuration by providing mechanical coupling with the intra-actuator arm spacer 163 (or spacer 502 in other embodiments) to the second actuator arm tine 166. Indeed, the explicitly stated function of the bifurcation of the actuator arm 160 of Lin et al. is to enhance stiffening for vibration reduction, and cantilevered configurations are undesirable for that objective because they reduce stiffness. (Lin et al., col. 5, ln. 55 to col. 6, ln. 25; FIGS. 6-8)."

The Examiner maintains the combination is made based on that the end cap of Bauck being placed would necessarily encompass any reconstruction needed such that the guard will still perform its basic functions. In this case, a mere relocation of parts to yield a product which will perform exactly the same is understood that a reconstruction may be necessary if it does not severely alter the basic operation of the device. For Bauck, the base portion can have been reconstructed such that the guard was attached to the top of the base plate while protecting the transducer, thus, the reconstruction would not alter the basic performance.

Appellant further contends that Lin does not teach element 165 as a component used on the actuator arm but rather is a portion of the arm itself. Furthermore appellant contends that Lin does not disclose item 165 being cantilevered because of its mechanical attachment to the actuator arm 160. This is not found persuasive because, item 165 of Lin is connected to the actuator arm through the E-block as disclosed in figure 6. Regarding the argument that Lin does not disclose item 165 being cantilevered, this is irrelevant because Bauck discloses this. Appellant further contends that Bauck is an old disc drive and thus, one of ordinary skill in the art would not have been motivated to use Bauck to protect a modern transducer, this argument is irrelevant. The age of a reference has no bearing on it's use in a rejection.

2. Whether claims 9, 10 and 14 are obvious over Bauck et al. (U.S. Pat. No.4,189,759) in view of Lin et al. (U.S. Pat. No. 6,961,218) in further view of Nagahiro et al. (U.S. Pat. App. Pub. No. 2003/0218833) under 35 U.S.C. §103(a).

Group #2: Claims 9, 10 and 14

Appellant's argument on Page 19:

"A person of ordinary skill in the art would not have known to combine the teachings of Bauck et al., which are directed to guards for protecting an actuator assembly inserted into a flexible disc file, or Lin et al., which are directed to stiffening and cooling an actuator arm assembly, with the teachings of Nagahiro et al., which are directed to damping or dissipating vibrations in a disc drive assembly. The cited references deal with different, unrelated problems. The references are not compatible or modifiable in a way that would produce the present invention as claimed. See M.P.E.P. §2143.01(II). The damping effect provided by Nagahiro is dependent upon its restraint board 12 being completely fixed to the arm 7 (i.e., not being cantilevered) in order to produce vibration-dissipating strain in the viscoelastic material 11. Thus, combining the teachings of the cited references would undermine the recitations of base claims 1 and 11 regarding a cantilevered configuration or cantilevered portion, and the proposed modifications would impermissibly change the principle of operation of the cited art."

The Examiner maintains because this is not found persuasive because the fact that the appellant recognized another advantage to Nagahiro is not a means for lacking motivation. In this case, the guard of Bauck could have been T-shaped because this would further solve problems related to vibrations. Furthermore, a necessary reconstruction to implement the guard portion of Nagahiro on the actuator arm of Bauck would have been understood considering the operation was not significantly changed.

XII. Related proceedings

No decision rendered by a court or the Board is identified by the examiner in the Related

Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully Submitted,

/Mark Blouin/

Primary Examiner of Art Unit 2627

Mark S. Blouin
Art Unit 2627

MSB
March 10, 2009

Conferee #1: /Joseph H. Feild/
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